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School Safety Study for Schroeder Middle, Valley Middle, and South Point Elementary Schools

Final Report

February 2013

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Grand Forks – East Grand Forks Metropolitan Planning Organization

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1.0 INTRODUCTION

The Grand Forks – East Grand Forks metropolitan area has seen an increase in safety concerns at its public schools. In order to address these ongoing concerns, The Grand Forks – East Grand Forks Metropolitan Planning Organization provides funding for school safety studies. The Advanced Traffic Analysis Center (ATAC) was contacted to conduct pedestrian safety and traffic circulation evaluations and to recommend appropriate engineering improvements/mitigation measures. The schools under consideration for the purpose of this particular study are:

- Schroeder Middle School (GF)
- Valley Middle School (GF)
- South Point Elementary School (EGF)

2.0 OBJECTIVES

This study has two main objectives –

- To evaluate pedestrian safety and traffic circulation at each school
  - Ensuring that latest recommended guidelines and manuals are followed
- To recommend short and long-term improvements/mitigation measures
  - Minimizing conflicts and streamlining traffic to enhance safety and improve operations

Areas of analysis included the following:

- Pedestrian facilities (presence, placement, quality, condition etc.)
- Traffic operations (vehicular as well as pedestrian)
- Traffic control and geometrics (traffic signals, pavement markings and signage etc.)
- Parking (pedestrian path or visual obstructions etc.) and
- Student pick-up/drop-off activities (duration, rule violations etc.)

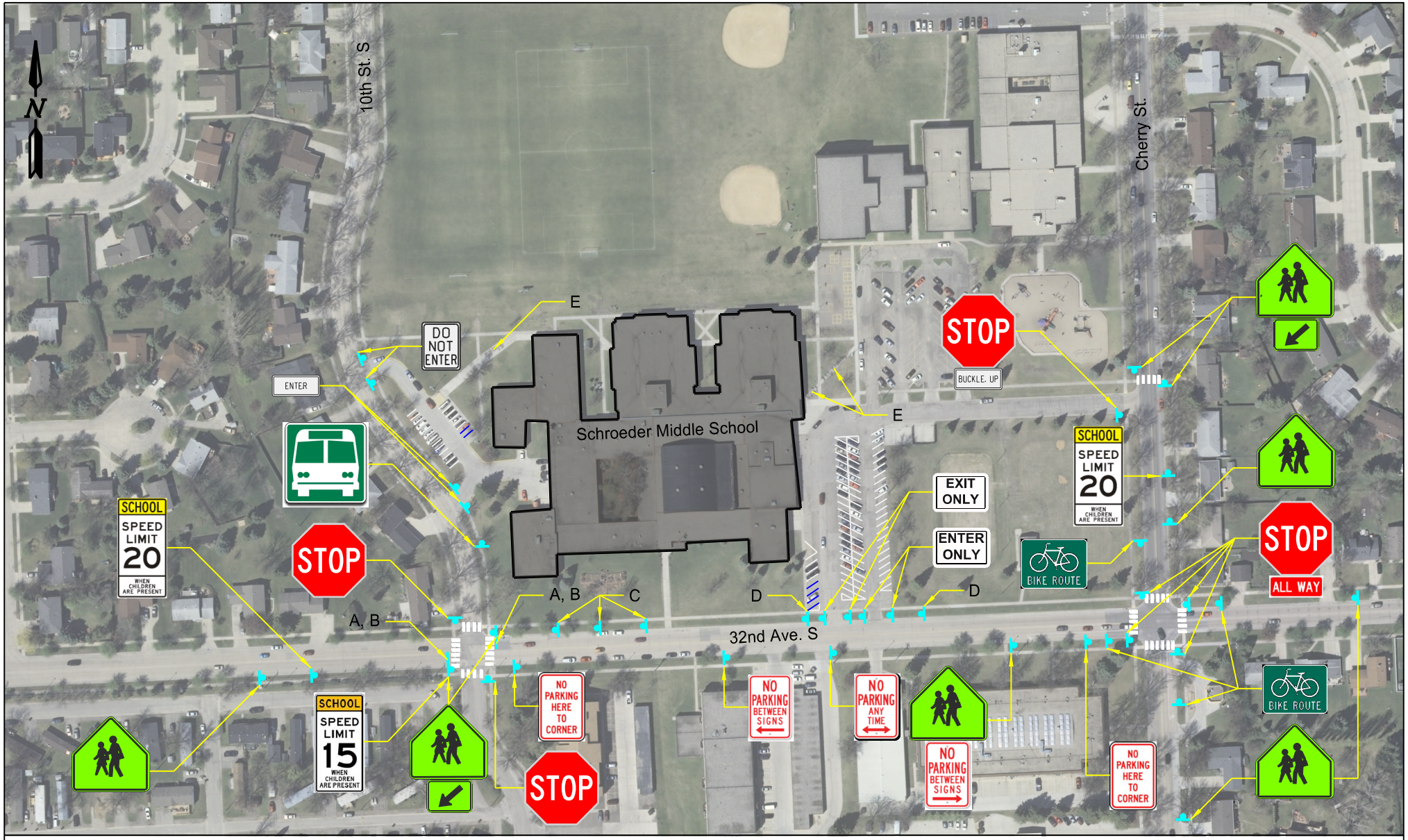
Each school site was visited multiple times to collect the required data and to document existing conditions. Pedestrian/vehicle interactions, parking operations, dismissal procedures, and student pick-up/drop-off activities etc. were observed. A Number of meetings with school and other involved officials were conducted to gather valuable input regarding existing conditions and known issues.

3.0 DESCRIPTION OF STUDY AREAS

This study analyzes the vehicle and pedestrian movements in and around the three schools. The following sections provide a description of the school locations and the surrounding areas. The criteria observed for each school include the roadway characteristics, traffic control and pavement markings, parking characteristics, and pedestrian activity.

3.1 Schroeder Middle School

Schroeder Middle School is located in a residential area on 32nd Ave S a couple of blocks east of S Washington St. (Figure 3.1). The school is bordered to the south by 32nd Ave S (minor



A: Pedestrian Beacon
B: Yeild to Pedestrian in Crosswalk
C: No Parking Bus Stop from 8AM - 4PM
D: No Parking 8AM to 6PM
E: Bike Rack

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School Safety Study for Schroeder Middle

Schroeder Middle: Existing

Figure 3.1

arterial), S 10th St (local) to the west, 29th Ave S (local) to the north, and Cherry St (collector) to the east. The enrollment at Schroeder Middle School is approximately 500 students and is supported by approx. 75 faculty and members of the staff.

3.1.1 Zonal Characteristics

Schroeder Middle School partially occupies a city block east of S Washington St. Kelly Elementary School is located to the north-east of it. The school has an approximate lot area of 15 acres and is located in (single-family) residential district. However, zones with One- and Two-Family residences and (high density) multiple family residences also share boundaries with Schroeder Middle School. Due to its close proximity to Washington St, zones with general businesses are also nearby. Kelly Park (Grand Forks Park District) lies south east of the school. The 2.5 acre park's amenities include (outdoor) hockey rinks, softball/baseball field, and restrooms. Figure 3.2 shows the ADT count for traffic around school zone. The red circle indicates the school's approximate location on the map.

3.1.2 Access Characteristics

Schroeder Middle School has 5 driveways connecting it to the abutting roadways, all of which are unsignalized. There are two (one-way) driveways on the west side of the school connecting it to S 10th St. Out of these two, the southern driveway is the entry and the northern is the exit driveway. These driveways connect to a western parking lot as well as paved walkways leading into the school premises. There are two (one-way) driveways on the south side of the school connecting it to 32nd Ave S. Out of these two, the eastern driveway is the entry and the western driveway is the exit driveway. These driveways connect to the south-east parking lot. There is one (two-way) driveway on the east side that provides access to/from Cherry St.

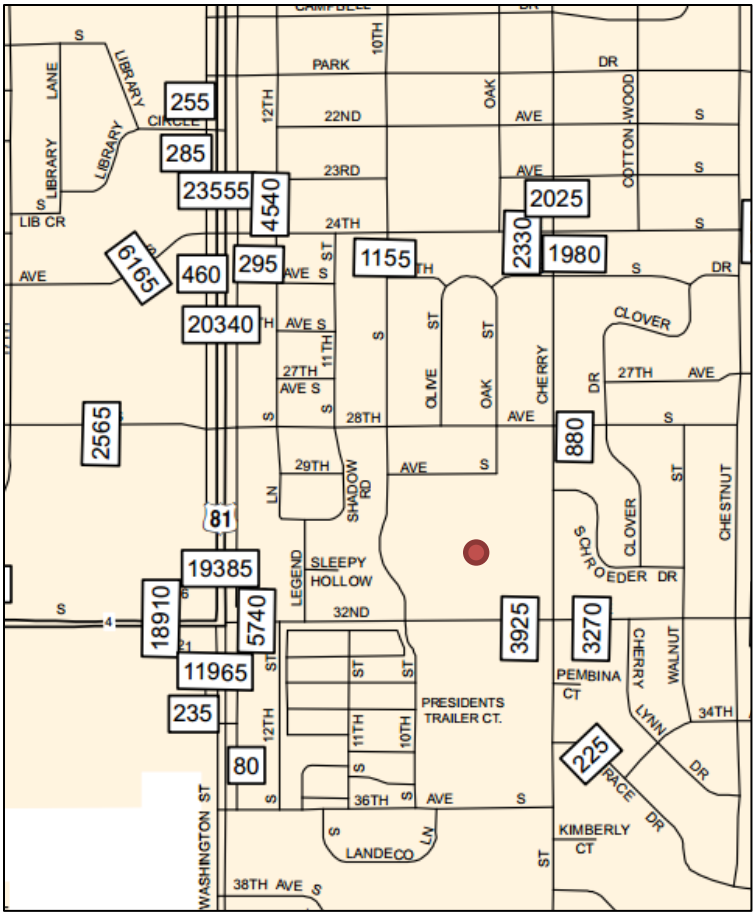


Figure 3.2 Schroeder ADT values

3.1.3 Traffic Control and Pavement Markings

The intersection of 32nd Ave S and S 10th St is a 2-way stop controlled intersection (east-west traffic on 32nd Ave S has the right of way). There are marked crosswalks on all four approaches of the intersection. The crosswalks across 32nd Ave S are controlled by flashing pedestrian beacon and signs. Figure 3.3 shows the picture taken during study period. . All crosswalks at this intersection are of paired continental type.

The posted speed limit on 32nd Ave S and Cherry St is 25 mph. Also, there are advanced school warning signs, which display a reduced school speed limit of 20 mph (when children are present).

Figure 3.3 Pedestrian beacon and signs at the intersection of 32nd Ave S and S 10th St

The intersection of 32nd Ave S and Cherry St is an all way stop controlled intersection. Marked crosswalks are present at all approaches of the intersection. All crosswalks at this intersection are of paired continental type. At crosswalk locations, a reminder to look both ways was painted onto the sidewalk as shown in figure 3.4 below.

Figure 3.4 Crosswalk pavement markings

3.1.4 Parking Characteristics

There are three parking lots adjacent to the school building. The biggest parking lot with a total of 66 spaces is located on the south-east side of building. Apart from these 66 spaces, there are about 3 accessible spaces. All spaces in this lot are for angled parking, which is in line with designated one-way driveways. This parking lot has access to 32nd Ave S (via two one way driveways), and Cherry St (via a two way driveway). The other parking lot with 18 spaces is located on the west of the school. This parking lot also has one way movement and has respective signs posted at entrance and exit locations.

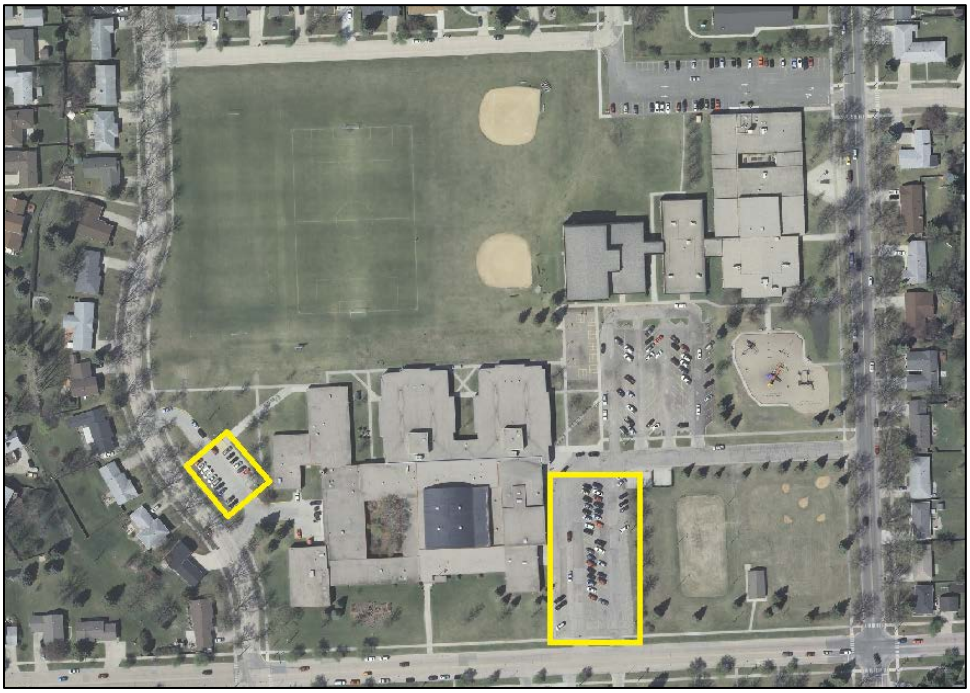


Figure 3.5 Parking lot locations for Schroeder middle school

Various Parking restrictions exist on the streets bounding the school (refer Figure 3.1).

3.1.5 Arrival/Dismissal Activity

Students are dismissed from all doors of the school. There are no crossing guards deployed at any of the adjacent street crossings. Approx. one-fifth of the students walk to school. Also, approx. one-fifth of the students use the parent-funded bus service (2 buses). ATAC observed the school dismissal period during a typical day at the school

3.1.6 Crash Experience

Traffic crashes from the year 2009 to 2011 (also Jan 2012 to June 2012) were evaluated. The intersections under consideration were those directly next to school. Only pedestrian/pedal-cycle related crashes were analyzed. The only relevant crash is depicted in the collision diagram below.

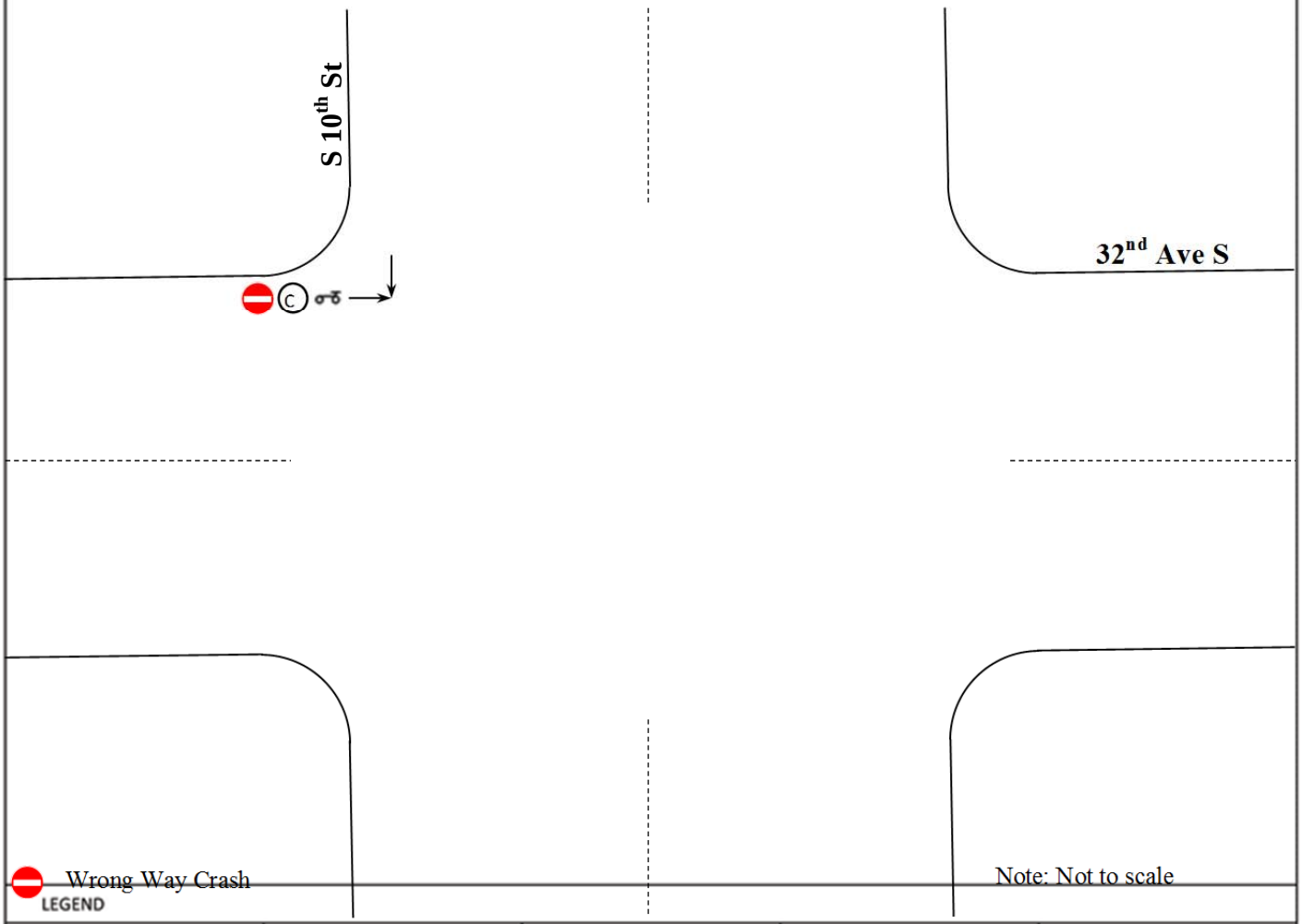
COLLISION DIAGRAM

N/S: _____

E/W: S 10th St / 32nd Ave S

TIME PERIOD: _____

DATE: 2009 – 2011 (Ped Only) / 2009



Wrong Way Crash

Note: Not to scale

LEGEND

Moving Vehicle	Driver at Fault	Light:	Weather:	Surface:
Parked Vehicle	Pedestrian	L = Daylight	C = Clear or Cloudy	D = Dry
Fixed Object	Bicycle / Moped	DN = Dawn	R = Rain	W = Wet
Head On	Deer / Animal	DU = Dusk	S = Snow/Ice	S = Snow/Ice
Rear End	Fatal Crash	D = Dark	X = Other/Unknown	X = Other/Unknown
Right Angle	A Injury Crash	X = Other/Unknown		
Turning	B Injury Crash			
Backing	C Injury Crash			
Sideswipe	Property Damage Only Crash			
Out of Control				

YEAR	TIME OF DAY			PVMT COND			TYPE OF COLLISION										SEVERITY					TOTAL
	DAY	DAWN/ DUSK	DARK	DRY	WET	SNOW/ ICE	RA	RE	LT	RT	HO	SS	BY	FXD OBJ	PED	OTH	K	A	B	C	O	

3.2 Valley Middle School

Valley Middle School is located at the intersection of 5th Ave N and N 20th St. in a residential area in Grand Forks (Figure 3.8). The school is bordered by 5th Ave. N. to the south, N 20th St to the east, and 6th Ave N to the north. There is a park west of the school. Approximately 400 students are enrolled in the school. The school is supported with the help of approx. 80 faculty and members of the staff.

3.2.1 Zonal Characteristics

Valley Middle School partially occupies a city block and is located a few blocks east of N Columbus Rd. The school's approximate area is 10.5 acres and is located in a single-family residential area. Zones with two-family and high-density multiple-family residences also share boundary with VMS. University Park (Grand Forks Park District) is located to the west of school. The 17.5 acre park's amenities include rental shelters, playgrounds, walking paths, various courts, and rinks. The map in figure 3.7 shows ADT counts around the school area with the red dot indicating approx. location of the school.

3.2.2 Access Characteristics

Valley Middle School has 4 driveways providing access. Two (one-way) driveways are located in the south (to and from 5th Ave N). The driveway on the east is for entry and that to its west is for exit. These provide access to the south parking lot. The other two (two-way) driveways are located at the north side (6th Ave N). The one on the east provides access to the north-east parking lot and the one to its west provides access to the north-west parking lot as well as the loading docks.

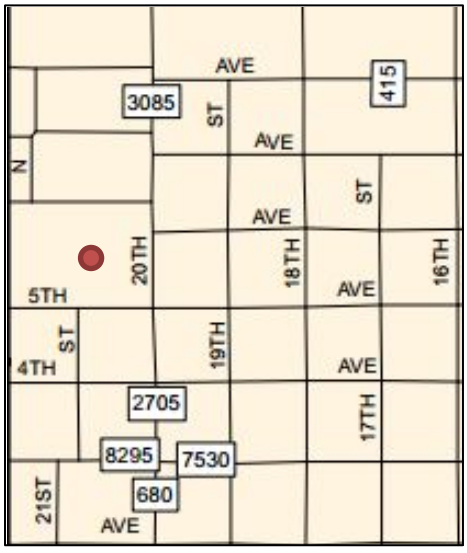
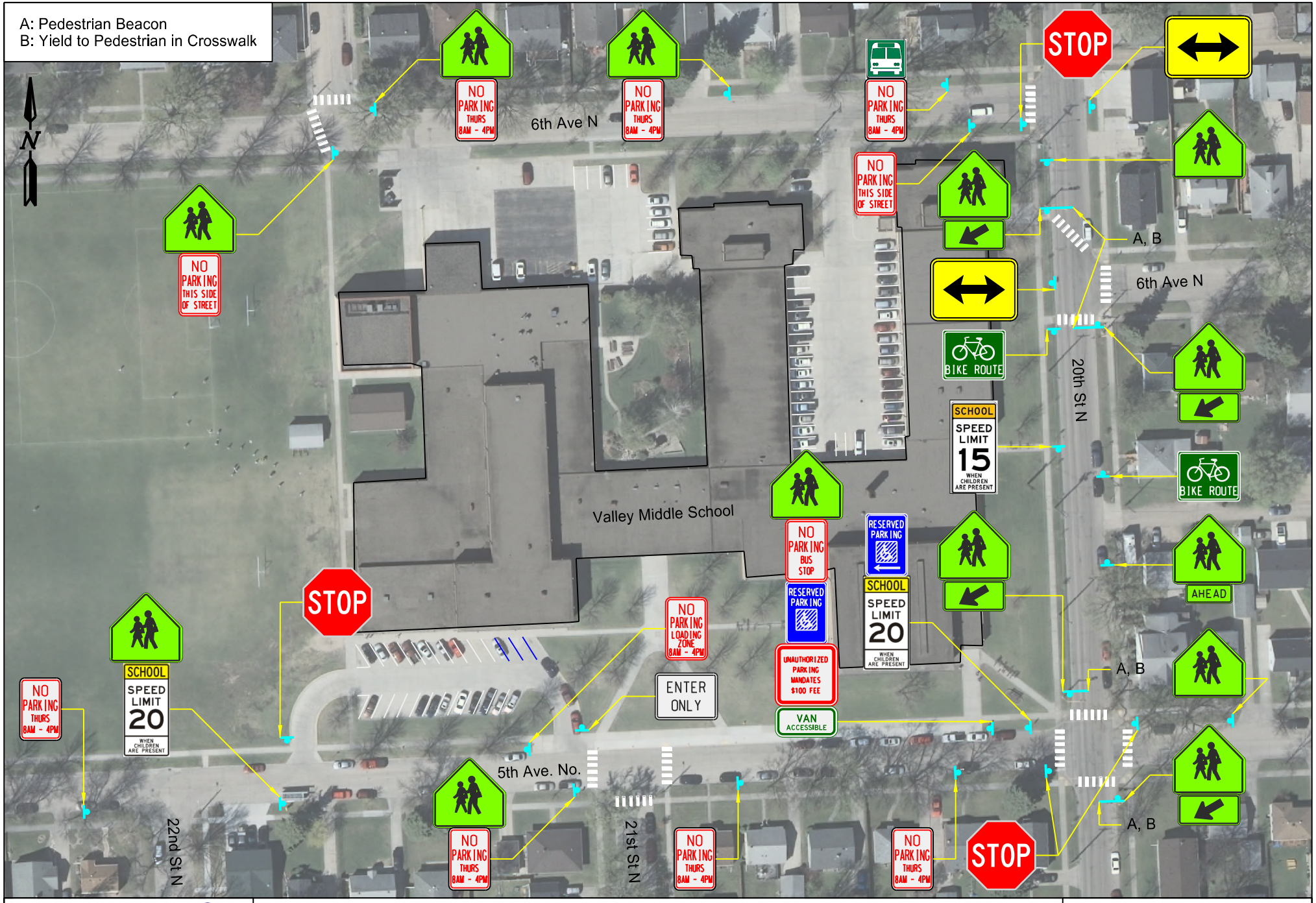


Figure 3.7 ADT volumes around school zone.



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School Safety Study for Valley Middle

Valley Middle: Existing

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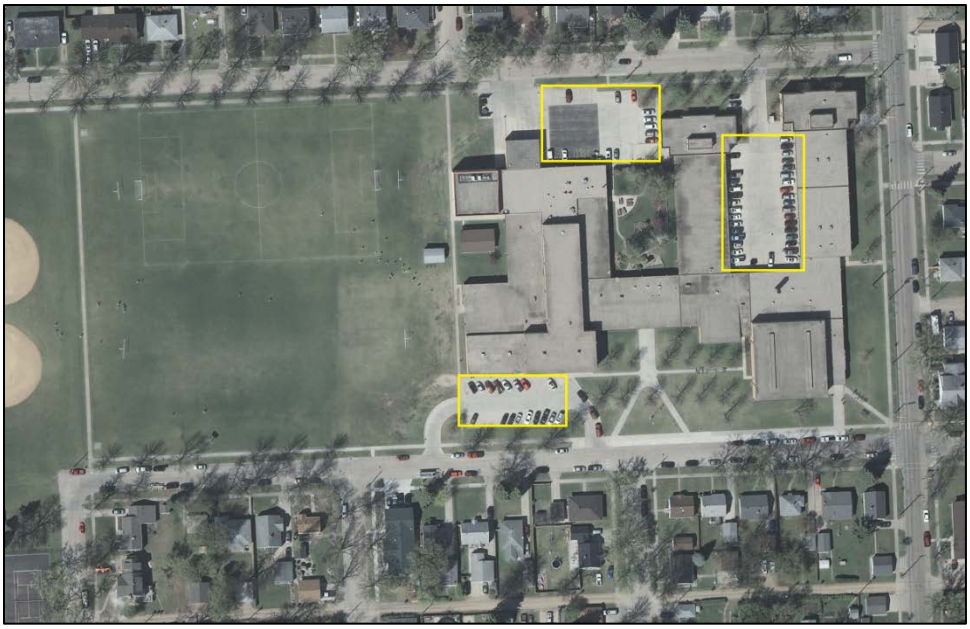


Figure 3.9 Parking lot locations for Valley Middle School

3.2.3 Traffic Control and Pavement Markings

The intersections in the vicinity of Valley Middle School are primarily controlled by stop signs. None of the intersections are signalized with an exception of flashing pedestrian beacons at the intersection of 20th St N and 6th Ave N. The traffic on 20th St N has the right of way while the traffic on 5th Ave N and 6th Ave N yields. Marked pedestrian crossings and advanced school warning signs displaying a reduced school speed limit of 20 mph are also present. For detailed locations refer to figure 3.8.

3.2.4 Parking Characteristics

There is limited parking available at Valley Middle School. The south lot has approximately 20 parking spaces (including accessible parking spaces). The north-east and the north-west lots have approx. 40 and 17 parking spaces, respectively. The north-west parking lot/loading area is also used by the school district food services as seen in Figure 3.9 above.

3.2.5 Arrival/Dismissal Activity

Most of the students use doors on the west and south of the school building. Some students also use the doors on the east. No crossing guards are deployed during the arrival/dismissal periods. There are two buses and the bus service is used by about one-tenth of the students. At this school, ATAC observed the dismissal process during one of the typical days without special events.

3.3 South Point Elementary School

South Point Elementary School is a public school and is situated in the city of East Grand Forks. The school is bordered by SE 17th Ave SE (Local) to west and SE 13th St SE (Collector) to north as shown in Figure 3.10. North of school is residential area and to south the school playground connected with Central Middle School. The enrollment at South Point Elementary school is approximately 400 students, which range from 3rd through 5th grade. There are approximately 60 faculty/staff employed at the school.

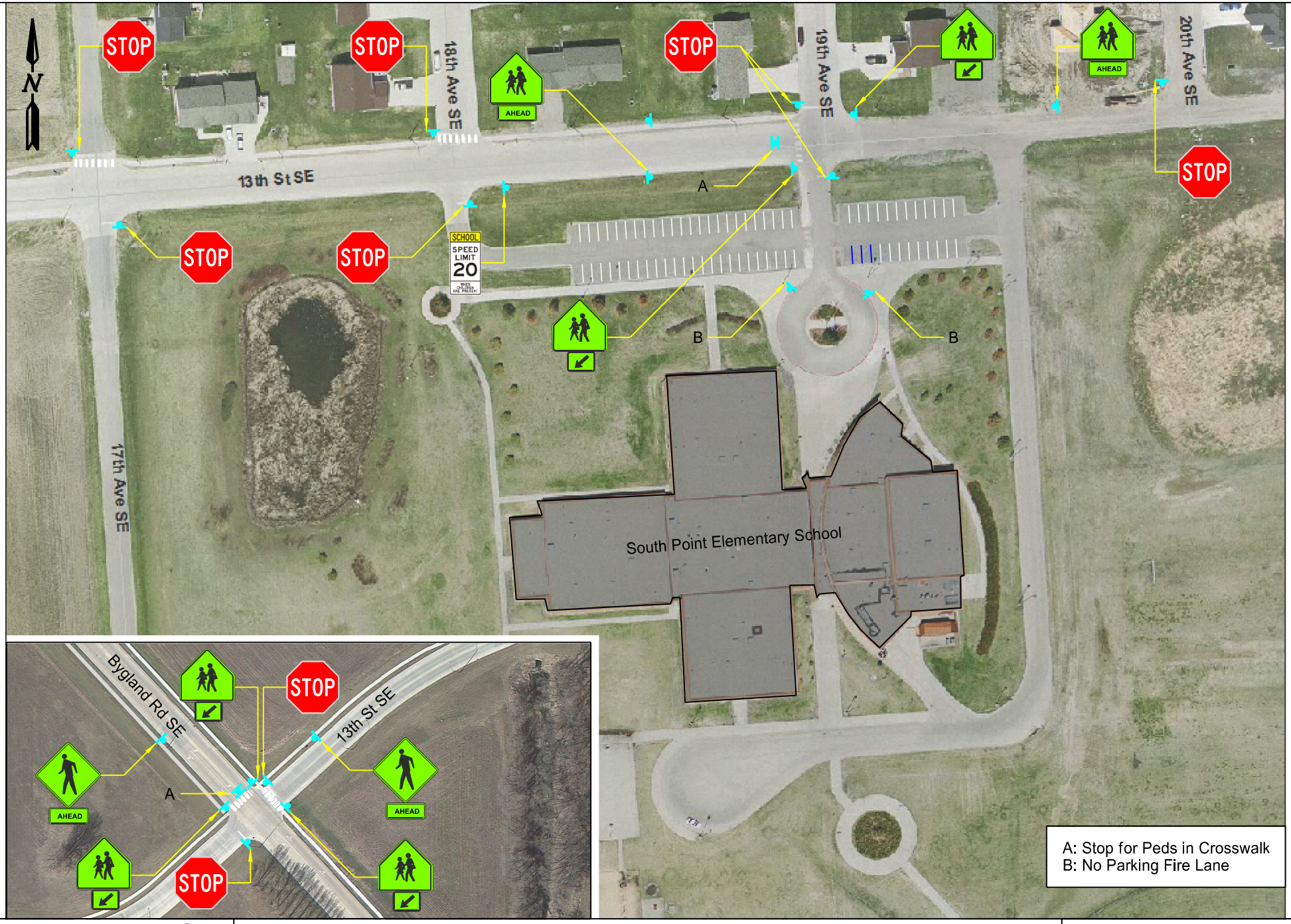
3.3.1 Zonal Characteristics

South Point Elementary School partially occupies a city block east of Bygland Rd SE. The school is located in residential district. Bygland Rd SE is a Principal Arterial north of 13th St SE and a Minor Arterial south of it. The dot in figure below marks the approximate location of the school. Bygland Rd SE had an ADT of 2500.

Figure 3.10 Approximate location of South Point Elementary

3.3.2 Access Characteristics

The existing conditions are shown in figure 3.11 below. South Point Elementary has access only from 13th St SE. Three (two-way) driveways provide access to the parking lots as shown in figure 3.12 below. The eastern driveway is primarily used by buses (although it also provides access to the east parking lot).



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School Safety Study for South Point Elementary

South Point Elementary: Existing

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Figure 3.12 – Parking and access at South Point Elementary

3.3.3 Traffic Control and Pavement Markings

The intersection of Bygland Rd SE and 13th St SE is a two way stop controlled intersection. The traffic on Bygland Rd SE has the right of way. Marked crosswalks exist on the southbound and westbound approaches. The crosswalks at this intersection are of continental type. In-street pedestrian crossing sign is present on the southbound approach.

East of Bygland Rd SE, 13th St SE has the right of way. The locals and driveways intersecting with it are stop controlled. The eastbound approach at 19th Ave SE and the southbound approach at 18th Ave SE have marked continental type crosswalks.

Speed limit on Bygland Rd SE around the intersection with 13th St SE is 30 mph. School speed limit sign is present for the westbound traffic on 13th St SE.

3.3.4 Parking Characteristics

There are two parking lots at South Point Elementary, both of which are located north of the school building. The north-west parking lot has approx. 50 spaces. The north-east lot has approx. 25 spaces out of which 3 are accessible. Both of the lots are accessible through the three driveways along 13th St SE. Also, both of the parking lots have perpendicular parking spaces as can be seen in figure 3.12 above.

A bike rack is also located on the northern side of the building, east side of the main entrance.

3.3.5 Arrival/Dismissal Activity

Most students arrive by following the eastbound 13th St SE. Some students arrive from the residential area directly north of the school. There are 8 buses serving the school. ATAC observed the student arrival period at this school during a typical day.

4.0 SAFETY & OPERATIONAL CHARACTERISTICS

This section of the report discusses the safety and operational characteristics observed during the site visits at Schroeder Middle, valley Middle, and South Point Elementary Schools. In addition to input-meetings with related officials and geometric data collection, ATAC conducted site visits to observe student arrival or dismissal periods as deemed necessary. During these site visits, following were the focus areas of observation:

- Pedestrian Activity
- Traffic Conflicts
- Operational Characteristics
- Safety Issues
- Vehicle – pedestrian interaction
- Vehicle – bike interaction
- Drop-off/pick-up procedures
- Bus – student interactions
- Bus – vehicle interactions

On September 28th 2012, ATAC staff conducted a site visit to observe the student arrival period at South Point Elementary. Site visits for Schroeder Middle and Valley Middle Schools were conducted on October 12th 2012. The following sections discuss ATAC's observations.

4.1 Schroeder Middle School

Almost half an hour prior to dismissal, despite the parking restrictions, vehicles were observed stopped on both north and south side of the street along 32nd Ave S as shown in figures 4.1 and 4.2 below. Also, during the same time, vehicles were observed stopped on both east and west sides of S 10th St as shown in figure 4.3 below.

The pedestrian flashing beacons were working properly and vehicles were observed reducing speeds, yielding to pedestrians, and proceeding with caution through the intersection of 32nd Ave S and S 10th St. However, the speed limit sign (on the eastbound approach malfunctioned) and also the pavement markings were worn out as shown in figure 4.4 below.

Figure 4.1 Vehicles stopped/parked along 32nd Ave S prior to dismissal

Figure 4.2 Additional vehicles stopped/parked along 32nd Ave S prior to dismissal

Figure 4.3 Vehicles stopped/parked along S 10th St prior to dismissal

Figure 4.4 Worn out pedestrian crossing and malfunctioning speed limit sign (inset)

During one of the geometric data collection site visits at Schroeder, it was observed that some parents dropped their kids off midblock while travelling eastbound on 32nd Ave S. The parents then make the kid(s) cross the street midblock in front of their vehicle while blocking traffic. It was also observed that most of the times, kids ran across the roadway to reach the school.

Figure 4.5 Full parking at the west parking lot

Figure 4.6 Vehicles parked in the driveway of the west parking lot

Given the fact that the west parking lot does not have a lot of spaces, it was not surprising to see it full, as shown in figure 4.5 above. However, vehicles were seen stopped/parked in the driveways and other non-designated areas of the lot as shown in figure 4.6 above.

Figure 4.7 Vehicles stopped/parked on both sides of S 10th St

Figure 4.8 More vehicles stopped/parked on both sides of S 10th St

Vehicles parked on both sides of S 10th St caused capacity reduction to the point that only one vehicle could pass through as is evident from figures 4.7 and 4.8 above. Students were observed running across the parking lot as well as the streets to reach their parents' vehicles. Pedestrian safety was reduced not only by vehicles being parked on both sides of S 10th St but also by vehicles parked in non-designated areas in the west parking lot. It was observed that the vehicles entering/exiting the parking lot were going at a high rate of speed. The vehicles speeding through the parking lot combined with students/pedestrians becoming 'invisible' while walking between parked cars created a potentially very dangerous situation.

Figure 4.9 Vehicles stopped/parked at undesignated areas and students crossing midblock

Students were seen crossing 32nd Ave S midblock, as seen in figure 4.10 below. Midblock crossing or jaywalking is a safety issue. Also, students were observed running across the street as can be seen in figure 4.11 below. It is unsafe for pedestrians to run across the street even on marked crosswalk locations. In some cases, parents were seen jaywalking along with the kids. Some parents were seen waving to the kids to encourage them to cross the street midblock. Also, students were observed waiting between parked cars to cross the street midblock as seen in figure 4.12 below. This is another safety concern as the driver's vision being blocked by the illegally parked vehicle; he/she may not be able to see the student waiting to cross or vice versa.

Figure 4.10 Student crossing midblock on 32nd Ave S

Figure 4.11 Student running across the street on 32nd Ave S

Figure 4.12 Parent walking their kids across the street on 32nd Ave S

Figure 4.13 Student waiting between parked vehicles to cross the street on 32nd Ave S

Students were observed running across the parking lot (south-east lot). Also, students were observed riding their bike in the parking lot as seen in figure 4.14 below. Also, prior to dismissal, a bike was observed parked at an undesignated location in front of the school as seen in figure 4.15 below.

Figure 4.14 Student riding bike inside the south-east parking lot

Figure 4.15 Bike parked at undesignated spot

It was observed that vehicles exiting the south-east parking lot formed two lanes at the end of the driveway as shown in figure 4.16 below. This not only caused confusion among drivers but also traffic conflicts. In addition, it could potentially interfere with drivers pulling out of the accessible parking spaces.

Figure 4.16 Vehicles forming two lanes while exiting the south-east parking lot

The parent funded buses were first seen pulling into the south-east parking lot to make a U-turn and then make a right turn going out of the driveway to park in their designated spots as expected. However, disregard was observed on parents' part as they exited the driveway while the buses were waiting to turn right as seen in figures 4.17 and 4.18 below.

Bus operations, in terms of making a right turn out of the parking lot, were also hampered by the vehicles parked in the no parking zone on the north side of 32nd Ave S. The buses had to make an even wider right turn after waiting for a gap where both directions of lanes were clear.

Figure 4.17 Buses waiting to make a right turn on to westbound 32nd Ave S

Figure 4.18 Parents passing the bus on the right

In addition to the concerns noted above, faulting was observed in the slabs at some sidewalk locations as shown in figure 4.19 below. It presents a safety hazard.

Figure 4.19 Faulted slab in sidewalk on the west side of the school

As mentioned earlier, there was one crash relevant to pedestrians at the intersection of 32nd Ave S and S 10th St. In the crash, the person on bike was travelling wrong way as they were eastbound on 32nd Ave S. In addition, they were not wearing any protective gear. This crash, however isolated and not related to school students, reflects the lack of knowledge on the area residents' part with regard to safe use of roadway/pedestrian facilities and sharing the road.

4.2 Valley Middle School

Prior to dismissal, vehicles were observed parked along both sides of 5th Ave N and also the nearby residential streets. Some vehicles were seen parked in the driveways leading in and out of the south parking lot as seen in figure 4.20 below.

Figure 4.20 Vehicles parked in the driveway of south parking lot prior to dismissal

Figure 4.21 Vehicle blocking sidewalk

Some vehicles were also observed blocking the sidewalk as can be clearly seen in figure 4.21 above.

Figure 4.22 Vehicles parked in spot reserved for school bus

Figure 4.23 Vehicle violating multiple parking related ordinances

It was further observed that vehicles parked in the spots reserved exclusively for school buses as seen in figures 4.22 and 4.23 above. Also, vehicles with no relevant parking permit were observed parked in accessible parking spots as can be seen in figure 4.23 and 4.24.

Additional vehicles were seen double parking along already illegally parked vehicles along 5th Ave N as seen in figure 4.24 below. This not only blocked traffic but also presented potential blockages for emergency vehicles, especially bigger vehicles such as fire trucks.

Figure 4.24 Double parking along 5th Ave N

The pedestrian flashing beacons located at the intersection of N 20th St and 6th Ave N were observed to be working properly as can be seen in figure 4.25 below. Also, drivers were observed to be yielding/stopping for pedestrians and proceeding with caution as expected. During dismissal, majority of the students were observed using the designated crosswalk locations as can be seen in figures 4.26 and 4.27. In addition, no apparent speeding issues were observed on parents' part.

However, the crosswalk at N 20th St and 5th Ave N was seen blocked a few times by parents waiting for their kids. Also, the school bus got blocked due to the unauthorized vehicles parked at the designated bus spaces.

Some students were observed crossing the streets midblock or crossing at the crosswalk in an unsafe manner as seen in figures 4.26 and 4.28. It was observed that some students rode their bikes on the crosswalk or even ran across the street.

Figure 4.25 Pedestrian flashing beacons at N 20th St and 6th Ave N

Figure 4.26 Students using crosswalks and vehicles stopping as expected

Figure 4.27 More students using crosswalks and vehicles stopping as expected

Figure 4.28 Student running across the street while crossing at the crosswalk

At certain locations along N 20th St, the sidewalk slabs showed signs of failure and longitudinal and fatigue cracking was observed as seen in figure 4.29 below.

Figure 4.29 Longitudinal cracking in sidewalk slabs along S 20th St

Figure 4.30 Faulting near crosswalk at the intersection of S 20th St and 5th Ave N

Figure 4.30 above shows faulting near crosswalk at the intersection of S 20th St and 5th Ave N. This is a safety concern for pedestrians and mobility concern for disabled users and must be remedied.

Figure 4.31 Damaged truncated domes

Also at the same intersection, damaged truncated domes were observed at the crosswalk locations as can be seen in figure 4.31 above. Poor drainage was also observed as can be seen in figure 4.32 below. This is especially unsafe for pedestrians and motorcycles.

Figure 4.32 Poor drainage conditions and damaged truncated domes at S 20th St and 5th Ave N

Graffiti was observed on various signs around the school as seen in figures 4.33, 4.34, and 4.35 below.

Figure 4.33 Graffiti on a stop sign at the intersection of S 20th St and 5th Ave N

Figure 4.34 Graffiti on a school crossing sign along 5th Ave N

Figure 4.35 Graffiti on another stop sign

The stop sign for traffic exiting the south parking lot is installed at an inappropriate height. It is much lower as can be seen in figure 4.36 below.

Figure 4.36 Inappropriate height of stop sign

Many parking spots in the north-east parking lot were found to be blocking the doors. These were mainly accessible spaces. However, vehicles parked in those spaces would inadvertently block the exits as can be clearly seen in figures 4.37 and 4.38 below.

Figure 4.37 Accessible parking space blocking two doors in the north-east parking lot

Figure 4.38 Another parking space potentially blocking adjoining doors

4.3 South Point Elementary School

As mentioned earlier, the student/staff arrival process was observed at South Point Elementary School. The process started with a school bus arriving at approx. 7:20 am. Parents started dropping their kids off soon thereafter. Some kids were dropped off in the parking lot as can be seen in figure 4.39 below.

Figure 4.39 Kids being safely dropped off in the parking lot

Figure 4.40 Some kids walking to school in a safe manner

Some kids were observed walking safely to the school following the marked pedestrian crossings in the street and the parking lot as seen in figure 4.40 above. A few kids were also observed biking safely to the school and also following the designated parking spaces while wearing appropriate safety gear such as helmet as seen in figures 4.41 and 4.42 below.

Figure 4.41 Student biking to school in a safe manner

Figure 4.42 Another student biking to school (slightly obscured by bushes)

However, most of the students biking to school were seen doing it in an unsafe manner. Students were seen cutting across the driveway without paying attention to oncoming traffic or vehicles that may be following them closely as can be seen in figure 4.43 below. Also, most of the students doing so were not wearing any protective gear leaving them vulnerable and more prone to injuries in case of a crash.

Figure 4.43 Student biking across the driveway in an unsafe manner.

The students cutting across the driveway then proceeded through the parking lot. They cut across accessible parking spaces and ramps meant for wheelchairs towards the bike rack located in the north-east of the main entrance of the school as seen in figures 4.44 thru 4.46 below. These students were also noted to be cutting across the driveways/parking lot spaces at a high rate of speed.

Figure 4.44 Students biking across the driveway and parking lot spaces in an unsafe manner.

Although not clear from the above picture, but none of the students were wearing protective gear.

Figure 4.45 A group of students biking across the driveway

Figure 4.46 The same group of students biking across the parking lot at a high rate of speed

Note that none of the students in figures above were wearing protective gear.

In addition, a number of students were seen riding their bikes on the streets adjoining the school in an unsafe manner. For example, kids were seen riding their bike on the crosswalk as seen in figure 4.47 below.

Figure 4.47 Student riding their bike on crosswalk

Also, students were seen riding their bikes on the wrong side of the street as seen in figures 4.48 and 4.49 below.

Figure 4.48 Students riding their bike on the wrong side of the road

Figure 4.49 Another student riding their bike on the wrong side of the road

Some students were seen riding their bike in a haphazard manner as can be seen in figures 4.50 thru 4.52 below.

Figure 4.50 Student riding their bike in a haphazard manner as a vehicle is stopped in driveway

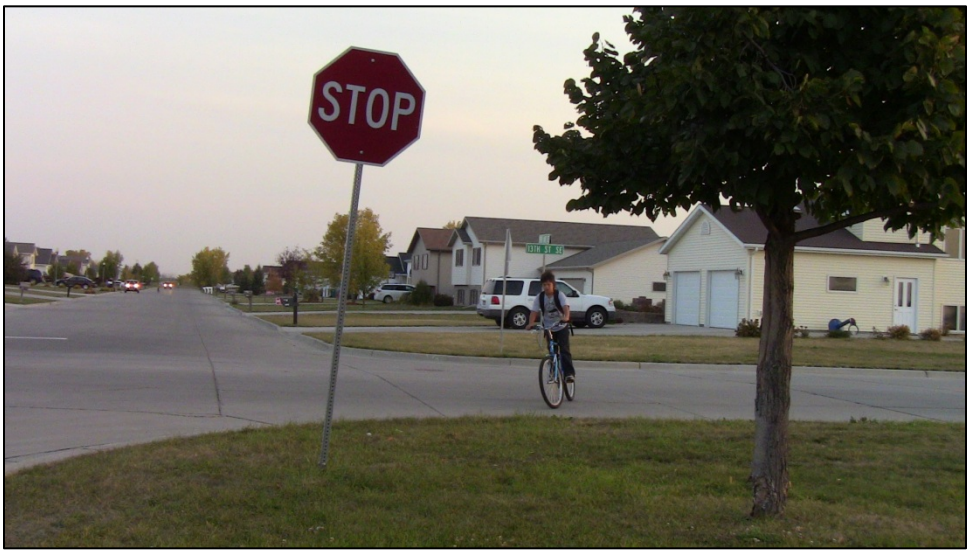


Figure 4.51 Student continuing to ride their bike in a haphazard manner


Figure 4.52 Student then riding their bike across the driveway and parking lot accessible spaces

In many cases it was observed that the kids were riding bikes that were too big for them. They were not seated comfortably and once seated their feet could not touch the ground. They struggled to pedal and also had to dismount the bike to reach the ground once stopped as seen in figures 4.52 and 4.53.

Figure 4.53 Student struggling to stay seated while stopped

Drivers were seen obeying the signs as expected and were stopping for pedestrians in the crosswalk. However, many students were seen running across the street as can be seen in figures 4.54 thru 4.56 below.

Figure 4.54 Student running across the street while another students rides their bike on the wrong side of the roadway

Figure 4.55 Students running across the street while a vehicle is stopped

Figure 4.56 Another students running across the street without waiting for the vehicle to stop

Many students were seen riding their bikes in a haphazard fashion in the east driveway used by the buses. This presented a potentially unsafe situation where they may hit or may be hit by one of the buses.

Some students were observed arriving at the school on scooters and skateboards which are known to be not street legal (figures 4.57 and 4.58).

Figure 4.57 Students riding their respective scooter and skateboard to school

Figure 4.58 Same students continuing to ride their respective scooter and skateboard to school

Some students were seen crossing the street midblock as can be seen in figure 4.59 below

Figure 4.59 Student crossing the street midblock

The bike rack was insufficient for the number of students who rode their bike to school and the students left their bikes lying all around the place as seen in figure 4.60 below.

Figure 4.60 Bikes left all over the place and some even on the path leading to the door

As can be seen in figure 4.61 below, kids tended to leave their bikes in disarray even before the bike rack was full.

Figure 4.61 Bikes left improperly parked or even on the ground

Most of the parents were observed using the circle north of the main entrance to drop their kids as can be seen in figure 4.62 below.

Figure 4.62 Parents using the circle to drop their kids

During the process of parents dropping their kids, double parking was observed numerous times as can be seen in figures 4.63 and 4.64. This not only blocked the fire lane but also made the kids walk between stopped cars. On a related note, it can also be seen that the fire lane curb marking needs to be repainted.

Figure 4.63 Parents double parking their vehicles while dropping their kids off

Figure 4.64 More vehicles double parked in the circle

Inefficient use of the circle was also observed as the right west half was used much more than the east half as seen in figures 4.65 and 4.66 below.

Figure 4.65 Vehicles on the west half of the circle

Figure 4.66 Only one vehicle seen on the east half of the circle (picture taken a split second after the one above)

The spillback from the vehicles parked in the circle was often observed blocking the driveway as can be seen in figure 4.67 below.

Figure 4.67 Spillback from the circle blocking the driveway

The two-way driveway leading to the circle was seen to be too narrow for two vehicles going in the opposite directions. The driveway is approx. 18’ wide. One of the vehicles had to essentially stop to let the other vehicle clear the driveway as seen in figure 4.68 below.

Figure 4.68 The vehicle on the right had to stop to let the one on the left clear the driveway

Many vehicles were seen overstepping the stop bar by almost a full vehicle length while exiting the school driveways as seen in figure 4.69 below. Note that there are no apparent sight distance issues that may be forcing the drivers to do so.

Figure 4.69 Vehicle overstepping the stop bar

At the intersection of Bygland Rd SE and 13th St SE, a dynamic speed display sign was observed as seen in figure 4.70 below. The sign was blocking part of the traveled way of north-west-bound thru lane.

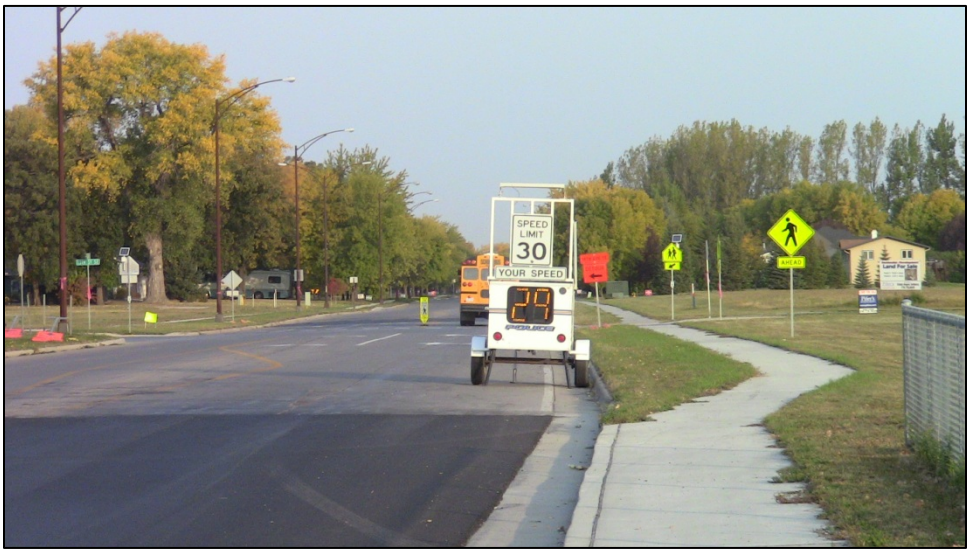


Figure 4.70 Dynamic speed display sign placed inside the traveled way

It was also noted that the lighting for this intersection with pedestrian crosswalks may be inadequate and should be subjected to further investigation.

5.0 IMPROVEMENT STRATEGIES

Traffic Safety and Traffic Operations go hand in hand. Also, both differ with geographic area, road user population etc. This is why both should be evaluated on a per location basis. Based on the locations studied, three out of the four E's of Safety need to be tackled:

- Engineering (design, operations, planning, maintenance etc.)
- Enforcement (through local law enforcement agencies)
- Education (driver education, student education, citizen advocacy groups etc.)

Engineering enhancements include the design changes, updated pavement markings and traffic control signs, planning changes which can be implemented at each of the schools. The recommendations provided in this study focus on engineering enhancements.

The enforcement strategies should place an emphasis on regular communication with parents and guardians as and when issues are observed. In case of recurring issues, requests can be made to law enforcement officials for an intervention. It is understood that an immediate increased presence of law enforcement officials may not be possible but at the same time it is important that the law enforcement agencies and police departments be apprised of any issues as and when they arise.

It is heartwarming that all three of the schools in this study have been taking a proactive approach to safety concerns through the use of newsletters and flyers which emphasize safe road-user practices. Also, members of the staff as well as related officials have consistently shown keenness to do whatever necessary to improve safety and operations around the schools. Safe Kids Grand Forks has also been active in the public school system to help raise awareness of safety around schools. Although members of the staff were present during the dismissals at one of the schools, it was noted that none of the schools implement the use of crossing guards/monitors on the streets adjacent to the schools. It is recommended that this practice be implemented in all three schools, as it has numerous safety advantages such as increasing awareness of school-related pedestrian traffic, and improving the visibility of crosswalks.

It is also heartwarming that authorities (especially in Grand Forks) are taking proactive approach to not only educating the public about sharing the road but also to provide better infrastructure (shared lanes, dedicated bike lanes etc.) conducive to such behavior. Introduction of better infrastructure is in line with driver expectation (when expected to share the road) and also makes road users more aware of their surroundings. In other words, in presence of sharrows or dedicated bike lanes, drivers would be on a look out for bikers using those facilities leading to reduced traffic conflicts and eventually safer traffic operations.

Another critical aspect of traffic safety is educating both pedestrians (school children) and drivers (parents/guardians) on practicing safety and awareness not only in and around school property but also anywhere else they may drive. Enforcement strategies primarily use a police presence to deter unsafe driving behavior and to warn/penalize observed unsafe behavior. Engineering enhancements assist in improving the safety and efficiency of pedestrian and vehicle traffic, and provide a means of organizing the operational characteristics at schools while keeping the stimuli presented to the road user as uniform and consistent as it can be. A

combination of engineering improvements/countermeasures, enforcement, and education of parents as well as students is essential for long-lasting school safety.

As mentioned earlier, educational strategies for improving safety around these schools need to be focused on both students and parents. Students need to be informed of safe practices when using the transportation network to get to/from school. The students need to know their responsibilities as road-users. They also need to be told of how their actions at an individual's level may impact others when it comes to road safety – be it drivers, pedestrians, or bikers.

However, the majority of the education needs to be directed at the parents/guardians who pick up/drop off the kids. It may be beneficial to discuss traffic safety issues with parents during parent-teacher meetings. Parents need to be aware of the issues observed at the schools, as well as the traffic control devices which are already in place or will be implemented as a result of this study.

Based on data collected during the initial meeting with the project's stakeholders and subsequent site visits, ATAC staff has developed improvement strategies for each of the schools in this study. The improvement strategies can be categorized into two groups: short/medium-term improvements and long-term improvements. In addition, the recommended improvements for each school coincide with a study completed in April 2008 by Ulteig Engineers, Inc., which looked at the application of school traffic control strategies (pavement markings, traffic control signs, and flashing beacons) for the City of Grand Forks.

The *Grand Forks School Traffic Control Device Strategy Study*, completed by Ulteig Engineers, Inc., contained several recommendations for improving pavement markings, traffic control signs, and flashing beacons around school locations [1]. The following recommended changes, which are in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition, apply to at least one of the three schools [2]:

- Pavement Markings
    - The major street should only be crossed once and the minor street may be crossed once or twice.
    - Existing crossings will have to be analyzed based on the ADT of the roadway and the number of pedestrians using the crossing.
- Traffic Control Signs
    - All 15 mph school speed limit signs located within a 20 mph school speed limit zone must be removed.
    - Out-dated School Crossing signs need to be replaced (by 2011).
    - School Crosswalk Warning Assembly must be used in conjunction with a School Advance Warning Assembly.
    - Speed limit signs should be used to indicate the end of a school speed limit zone.
- Flashing Beacons
    - All existing flashing beacons should be analyzed to determine if they are warranted based on several pre-determined factors. It was noted that a city ordinance states that flashing beacons can only exist in a 15 mph zone. This ordinance is currently under review.

In addition to the changes recommended by the Ulteig Engineers, Inc. study, several other issues were observed related to the traffic control devices at each of the three schools. The main issue was not having consistency among the types of signs being used, especially speed limit. There were instances of presence of ramps without a marked crosswalk. Such ramps should be removed in order to no longer encourage pedestrians to cross at unmarked locations.

The correct orientation/placement of school warning signs, speed limit signs, and school crosswalk warning signs in relation to each other are illustrated in Figure 7B-3 in the 2003 MUTCD. The specified sequence is listed as follows:

1. Advanced warning assembly
2. School speed limit
3. School crossing assembly
4. End school zone/standard speed limit sign

It should be noted that although there is an updated version of the MUTCD (2009), the 2003 version was re-adopted by the North Dakota Department of Transportation. When the 2009 version is adopted, there may be changes which need to be addressed.

The following sections will discuss the characteristics of each school along with proposed recommendations. The short/medium-term recommendations will discuss proposed changes to the signage and pavement markings at each of the schools. The long-term recommendation will provide changes such as geometric enhancements to improve the operations at each school. Approximate cost data for each of the alternatives will also be provided. It should be noted that the estimates don't include the cost of moving utilities, tree removal, incidentals, etc. They are merely to give a rough idea of the expected cost.

5.1 Schroeder Middle School

During the initial stakeholder meeting and subsequent site surveillance, data were collected on the operational efficiency (or perceived lack thereof) at Schroeder Middle School. The following sections provide suggestions for improvements that can be made at the school.

5.1.1 Short/Medium-Term Strategies

The parking restrictions currently in place around the school are relatively consistent. It is recommended that the parking on west side of S 10th St. be prohibited. The signs should indicate No Parking No Stopping. This will not only deter parking on both sides of the street (which reduces capacity and causes safety concerns) but will also not require kids to cross the street during arrival or dismissal. It is recommended that parking and stopping be prohibited on the south side of 32nd Ave S between S 10th St and Cherry St especially during school hours. Similar to 10th Street the signs should indicate No Parking No Stopping. This will reduce the number of kids crossing the street midblock between cars to be picked up or dropped off.

The recommended changes to signs and pavement markings are shown in Figure 5.1. It is recommended that dynamic Vehicle Speed Feedback signs be installed in conjunction with the school speed limit signs. It is also suggested that to improve sign comprehension, both the speed limit sign and the speed feedback sign be installed on the same support. Note that pavement markings on the exit driveway should be put in only after widening the driveway. Fire lanes in and around the parking lots/driveways should be clearly marked. This will not only discourage

parents from blocking the driveways but will also provide a basis for law enforcement officials to warn/penalize offenders as deemed necessary. Again, it is necessary that parents be informed of any changes made as a result of this study. During the site visits, it was noted that some of the crosswalks in the vicinity of the school were not in good condition especially at the intersection of 32nd Ave S and S 10th St. It is recommended that all the worn out crosswalks be repainted.

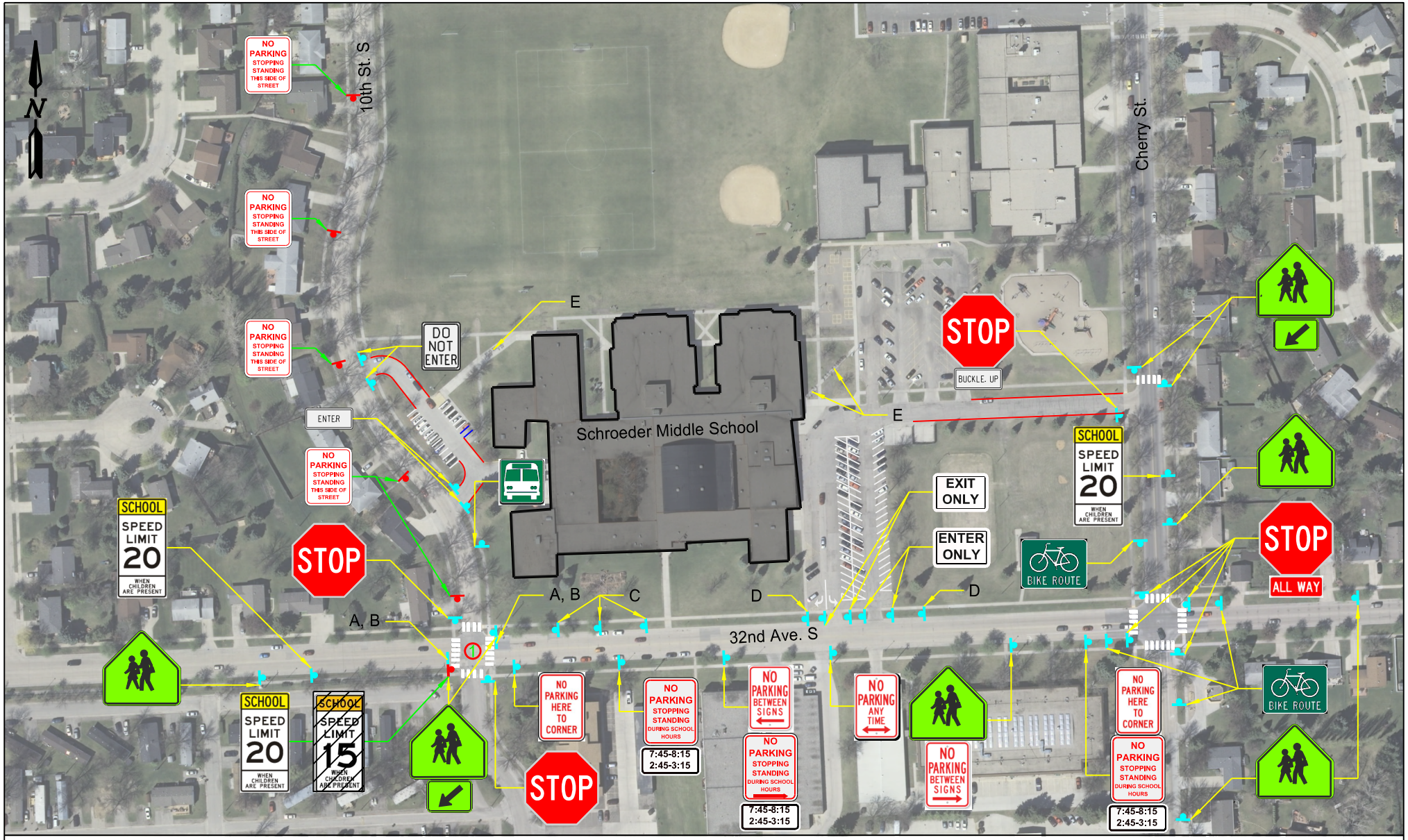
The south-east Parking lot/drop off location is adequately laid out allowing drop off of kids along the school side of the driveway and being separated from bus loading. It is recommended that the south exit driveway be widened to accommodate two lanes of exiting vehicles. If widened, the exit must be marked for right turn only and left turn only lanes respectively. The additional space needed for the exclusive right turn lane may be accounted for by removing the parking spaces on the west end of the parking lot. It is expected that the practice of placing the in-street sign reminding drivers to yield to pedestrians will be continued even after widening the driveway.

During one of the meetings with stakeholders it was brought up that due to a "Exit Left Turn Only" sign posted at the driveway of the nearby Kelly Elementary School, vehicles are being sent to high pedestrian activity location. It is recommended that as long as separate dismissal times exist between Kelly Elementary and Schroeder Middle Schools, the sign be removed.

Current dismissal practices at Schroeder Middle School involve the use of all exits on all sides of the school. However, it was observed during dismissal that members of the staff were not present in the vicinity school crossings etc. It is recommended that members of the staff monitor the crosswalks adjacent to the school, primarily along 32nd Ave S and S 10th St (the two areas with the most observed pedestrian activity). In addition, crossing guards or class monitors should be deployed. This practice not only increases the safety for the students, but also provides makes parents and other drivers more aware of the school crossings. It is also recommended that during dismissal, members of the staff help enforce parking restrictions in and around school.

Kids must be encouraged to walk or bike to school. This would have multiple benefits as already demonstrated by Safe Kids to School. Carpooling must be encouraged and even rewarded (if possible). Parents may carpool and pick-up or drop-off their neighbor's kids along with their own, with previously decided and trustworthy plans. Members of the staff should also be encouraged to carpool as this can result in year-long savings not only in terms of expenses such as gasoline, repair etc. but also reduced wear and tear of the vehicle.

A parking facility similar to Cellphone Parking Lot/Waiting Area (found at major Airports around the nation) can also help in this case. It will disperse the peak period congestion and distribute it between the school and the Waiting Area location(s). It is recommended that after required permission is granted, *The Church of Jesus Christ of Latter-day Saints* located at the intersection of Cherry St and 28th Ave S be considered as a Cellphone Lot/Waiting Area. Parents, who arrive before the dismissal, may safely park and wait in the church's parking lot for the school to let out. Thus, in effect, the parents would only be actively loading on school premises. This location of parking is very well suited as some parents pick up kids from both Schroeder Middle and Kelly Elementary Schools.



A: Pedestrian Beacon
B: Yeild to Pedestrian in Crosswalk
C: No Parking Bus Stop from 8AM - 4PM
D: No Parking 8AM to 6PM
E: Bike Rack

① - At Intersection:
- Replace damaged sidewalk as necessary
- Re-do crosswalk markings

ATAC ADVANCED TRAFFIC ANALYSIS CENTER

School Safety Study for Schroeder Middle

Schroeder Middle: Proposed

Figure 5.1

5.1.2 Long-Term Strategies

Considering the current geometric facilities and concerns noted during stakeholder meetings, there are not many long term recommendations which may improve the operations at the school, primarily during the dismissal process. It was observed that the flashing pedestrian beacons operate for an hour or so even though the dismissal period does not even last for half an hour. It is understood that the current MUTCD does not allow installation of Pedestrian Hybrid Beacons at intersection locations (especially with 4 approaches). However, with great anticipation it is expected that the next major update to MUTCD would allow it. It is recommended that the intersections around Schroeder Middle School that currently have flashing pedestrian beacons be studied as per the next MUTCD to check if they meet the warrant for Pedestrian Hybrid Beacons.

It is also recommended that the stretch of faulted sidewalk around the intersection of 32nd Ave S and S 10th St be repaired or replaced as necessary.

It should be noted that the two most important efforts at this school needs to be education and enforcement. A majority of the safety issues were caused by the parents. Having members of the staff or crossing guards present to monitor pedestrians at the crossings, and strict parking enforcement around the school would have the biggest impact. It should also be communicated to parents that they need to take a more proactive role in their children's safety as children often tend to follow whatever example is set by the parents. Also, the public needs to be re-educated on safe use of the roadway network – especially while walking or biking. The public should be encouraged to share the road while on pedal-cycles and not go against the traffic. Also, the use of safety gear such as helmets, knee pads, elbow pads etc. should be encouraged.

5.2 Valley Middle School

Based on discussions with the stakeholders, site visits, and dismissal observations, the following sections provide discussion on both the short/medium-term strategies and the long-term strategies for the school. These strategies are in addition to the educational/enforcement efforts mentioned earlier.

5.2.1 Short/Medium-Term Strategies

Numerous parking violations were observed during the site visit as discussed earlier in this report. Also, during the meetings with school officials, the lack of adequate parking spaces was brought up. From the short term stand point, it is recommended that the south parking lot be used only once all the spaces in the two parking lots to the north of the school have been filled.

Fire lanes in and around the parking lots or driveways leading in and out of the parking lots should be clearly marked. Again, this will not only discourage parents from illegally parking their vehicles in the driveways but will also provide a basis for law enforcement officials to warn/penalize offenders as deemed necessary.

The recommended changes to signs and pavement markings are shown in Figure 5.2 below. Similar to Schroeder Middle School, it is recommended that dynamic Vehicle Speed Feedback signs be installed in conjunction with and on the same support as the school speed limit signs.

During one of the site visits, it was noticed that some of the parking spaces in the north-east parking lot were not marked correctly. The current space allocation would allow vehicles to be parked while partially blocking the exits. It is recommended that the spaces within the parking lot be re-allocated in order to prevent vehicles from inadvertently blocking the exits.

Targeted enforcement is necessary to stop parents from blocking the street, the sidewalk, and the fire lane. It is of highest importance to not affect mobility by blocking the street/driveway as it would inevitable delay emergency vehicles from responding to emergency situations.

Carpooling must be encouraged in both parents and faculty/staff. Carpooling can drastically reduce the level of congestion currently experienced at the school especially during the dismissal. Parents may carpool to pick-up/drop-off their own kids along with their friends', in line with previously decided and trustworthy plans. Members of the staff should also be encouraged to carpool as this can result in year-long savings not only in terms of expenses such as gasoline, repair etc. but also reduced wear and tear of the vehicle.

The lack of parking at the school can also be addressed by considering Cellphone Lot/Waiting Area type parking, especially during the dismissal. Two parking locations are recommended for consideration:

- University Park
- University Lutheran Church

Both of these locations are within 2 blocks of the school. Note that University Park is next to the school. The practice of such parking until the school is dismissed will alleviate the congestion as parents will have alternate parking spaces available immediately.

Both carpooling and Waiting Area parking are recommendations that can be considered long term strategies as well. These must be implemented as soon as possible and should be urged in future as well.

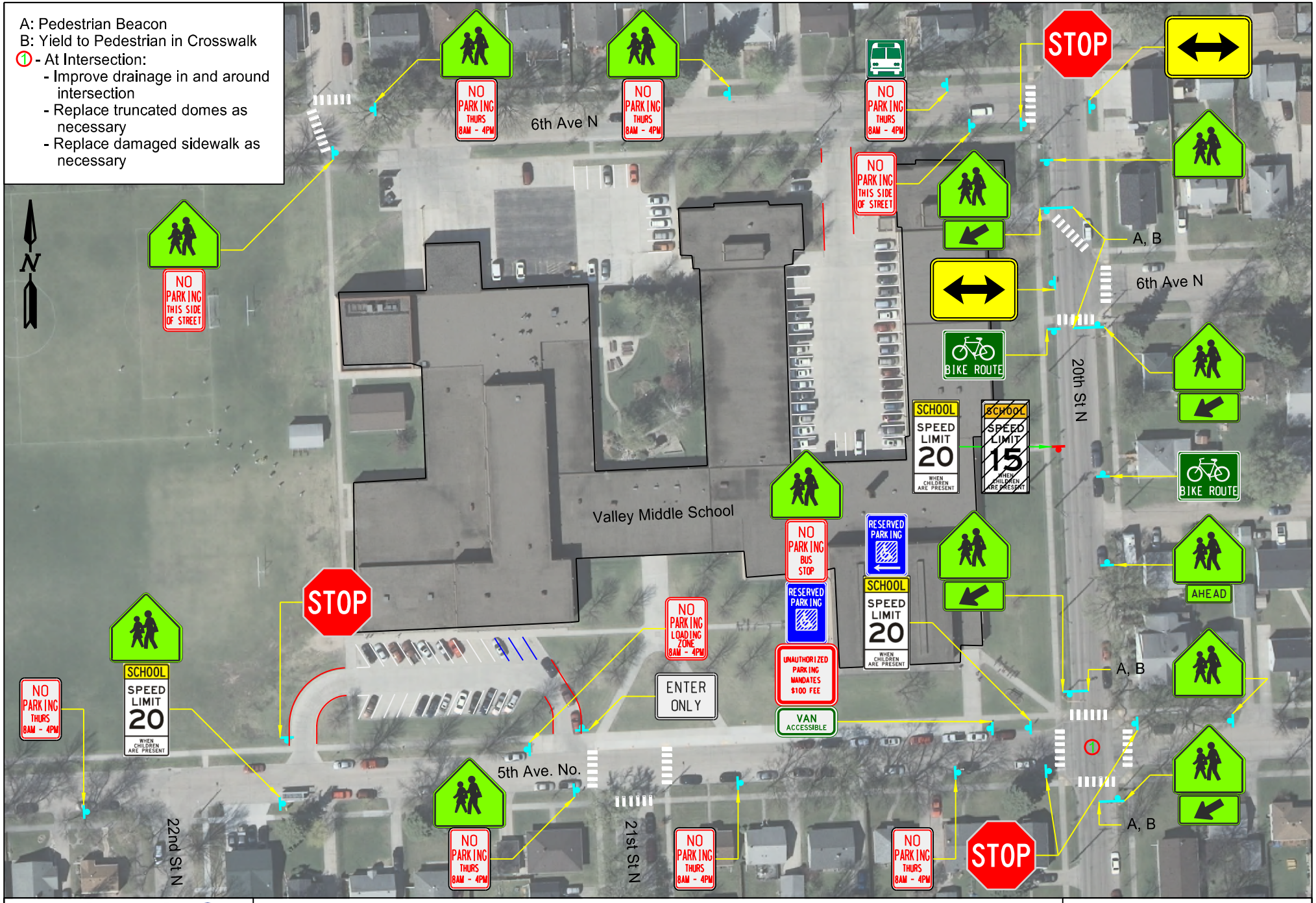
Also, kids must be encouraged to either walk or bike to school. It is recommended that additional bike racks be provided for organized and convenient parking of the bikes. As mentioned earlier, the students must be educated on safe use of the transportation network when walking or biking to school. Also, the public must be educated on how to safely share the roads.

The signs with graffiti must be replaced or the graffiti removed from them. They pose a safety issue as they add to driver distraction. Some graffiti appeared to be non-permanent type adhered to the sign with tapes. Attempt may be made to remove such graffiti. Student involvement in such attempt is highly desirable as it will educate them on traffic safety concerns of graffiti.

Also, it is recommended that the stop sign at the exit driveway of the south parking lot be re-mounted such that it is at an appropriate height. Wrongly mounted signs such as this particular stop sign go against driver expectation. Drivers expect same stimuli in most cases as they themselves are expected to behave the same (for example at a stop sign).

According to current dismissal practices at the school, most of the students exit through doors on the south side of the premises. It is recommended that other exits of the school also be used during dismissal as it will divide the congestion further.

Also, it was observed during dismissal that neither members of the staff nor crossing guards/monitors were readily present in the vicinity school crossings etc. It is recommended that members of the staff monitor the crosswalks adjacent to the school, primarily along 5th Ave N, which experiences most of the dismissal activity. Deployment of crossing guards/monitors would also in improving the safety and operations during the dismissal.



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School Safety Study for Valley Middle

Valley Middle: Proposed

Figure 5.2 | Page 60

5.2.2 Long-Term Strategies

The proposed enhancements at Valley Middle School include building new infrastructure as well as repairing the existing features which are showing signs of failure.

As mentioned earlier, the sidewalk and crosswalk near the intersection of S 20th St and 5th Ave N has faulted and cracked. It is recommended that the damaged portions of the concrete slabs and truncated domes be replaced. Also, poor drainage conditions around the same intersection should be improved by repairing the rutted pavement and replacing the insufficient gutters. This issue may require further investigation.

To solve the lack of parking spaces, it is recommended that an additional parking lot be constructed in the south-west of the school premises. Approx. location of the proposed parking lot is shown in figure 5.3 below.

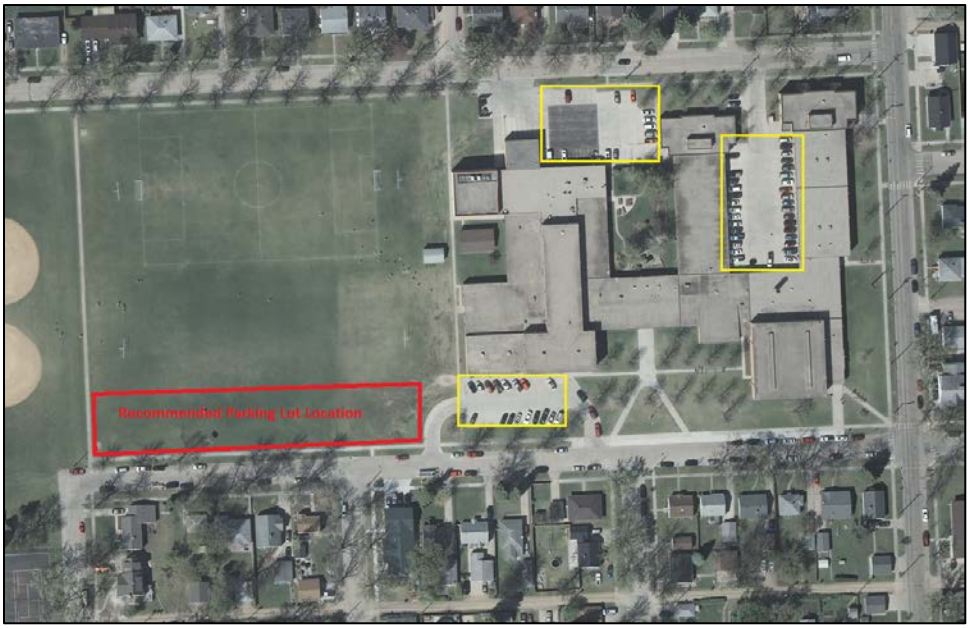


Figure 5.3 – Valley: Proposed Parking Lot Location

Similar to Schroeder Middle School, it is also recommended that those intersections in the vicinity of Valley Middle School, which currently have flashing pedestrian beacons be studied as per the next MUTCD to check if it meets the warrant for Pedestrian Hybrid Beacons.

5.3 South Point Elementary School

Similar to the other schools, specific short- and long-term strategies (in addition to education, enforcement etc.) are discussed in the following sections.

5.3.1 Short/Medium-Term Strategies

Students should be discouraged from using the driveway on the east end of the school. This driveway is mainly used by buses. As mentioned earlier, students were observed riding their bikes in this driveway. Such unsafe behavior must be discouraged.

The current location of the bike racks encourages unsafe maneuvers by students arriving on bicycles as noted earlier. It is recommended that the bike racks be moved to the west side of the main entrance to the school. Also, additional bike racks must be installed as the current ones do not provide enough spaces for organized and safe bike parking.

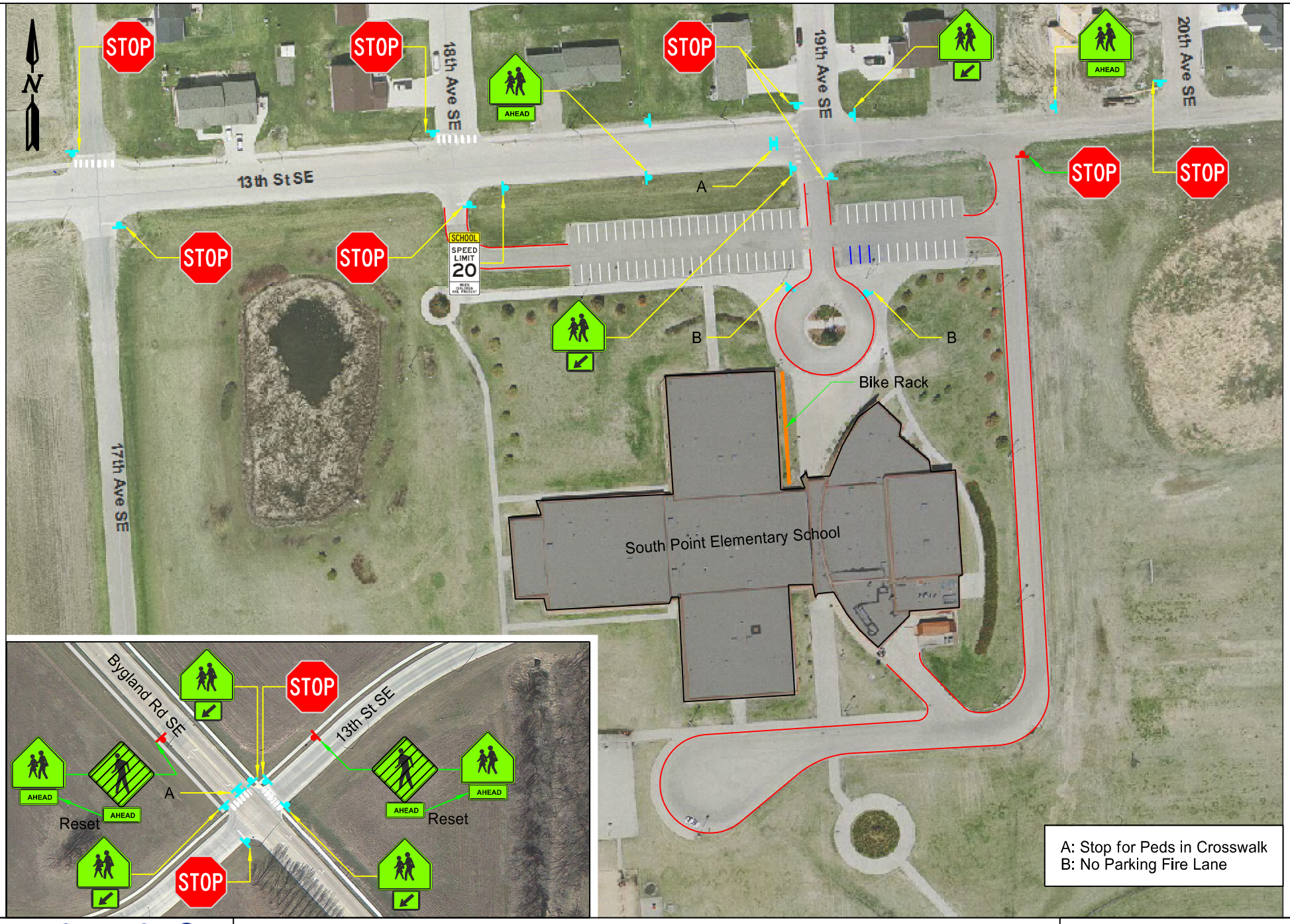
It is recommended that the current lighting at the intersection of Bygland Rd SE and 13th St SE be re-evaluated in order to ensure that enough luminance is made available for safe crossing of the highway during dark early mornings.

Construction related temporary control devices that are no longer needed along Bygland Rd SE must be removed.

The dynamic speed display sign placed on the pavement itself must be moved so that it does not block the roadway (or the sidewalk, when moved).

Similar to the other schools, parents as well as members of the staff should be encouraged to carpool, the numerous benefits of which have already been discussed earlier. Also, the efforts of encouraging students to walk or bike to school, the outstanding results of which were observed during the site visit, must be continued.

During one of the stakeholder meetings the lack of sign comprehension with respect to rapid flashing school crossing signs was brought up. It is recommended that targeted educational efforts be undertaken so that not only the pedestrians (students) but also the drivers (parents and other area residents) are made aware of the correct interpretation of different modes of the newly installed signs. The practice of using crossing guards/monitors is also recommended. Similar to other schools in the state, volunteers from nearby schools may also be deployed to assist students in determining when it is safe to cross the street.



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School Safety Study for South Point Elementary

South Point Elementary: Proposed

Figure 5.4

5.3.2 Long-Term Strategies

In order to accommodate the demand for parking spaces, addition of a parking lot is recommended. It is recommended that the new parking lot be located on the east side of the school premises as shown in figure 5.5 below.

It is recommended that the two west driveways, other than that currently being used by buses, be redesigned keeping in mind that they will be used for simultaneous exit and entry by passenger cars. The current throat width of the two driveways occasionally forces vehicles to stop/yield until the driveway has been cleared by the oncoming vehicle. The driveway leading to the circle in front of the main entrance should also be widened similar to the two driveways.

Figure 5.5 – South Point: Proposed Parking Lot Location

6.0 SUMMARY AND CONCLUSION

This study focused on pedestrian safety and traffic circulation for Schroeder Middle School (GF), Valley Middle School (GF), and South Point Elementary School (EGF). The stakeholders for this study include school administrators from each of the three schools, as well as parent-teacher organizations, the City of Grand Forks, the City of East Grand Forks, the Grand Forks-East Grand Forks Metropolitan Planning Organization (MPO), the Grand Forks Public School District, the East Grand Forks Public School District, and Safe Kids Grand Forks. Data requirements for the study were fulfilled at stakeholder meetings and at subsequent site visits, which were conducted by ATAC staff.

This study primarily focused on proposed engineering as well as educational improvements to the three schools. It is of utmost importance that all of the engineering improvements outlined in this study be supplemented with corresponding education and appropriate enforcement initiatives. A summary of the changes along with the cost estimates proposed in this study are given below.

6.1 Schroeder Middle School

- Update signs and pavement markings as recommended (short-term, $5,300).
    - Continual education/enforcement efforts may be necessary due to the proposed changes in parking on S 10th St.
- Widen the exit driveway of south-east parking lot (on 32nd Ave S) and mark dedicated left- and right-turn lanes as recommended.
- Encourage members of the staff to serve as crossing guards along 32nd Ave S and S 10th St (short-term and long-term).
- Encourage members of the staff to educate and to help enforce parking restrictions (short-term).
- Encourage vehicles exiting the south parking lot to do so in an orderly fashion without any distractions as recommended (short-term).
- Encourage carpooling among parents/guardians as well as by members of the staff (short-term and long-term).
- Encourage Cellphone Lot/Waiting Area type parking among parents/guardians (short-term and long-term).
    - Consider: The Church of Jesus Christ of Latter-day Saints.
- Continue encouraging kids to safely walk or bike to school (short-term and long-term).
- Repair/replace the faulted sidewalk around the intersection of 32nd Ave S and S 10th St. ($500).
- Consider installing Pedestrian Hybrid Beacons if allowed per MUTCD guidelines in the near future (long-term, $20,000).
- Targeted enforcement is recommended as and when deemed necessary by the concerned law enforcement agencies.

6.2 Valley Middle School

- Update signs and pavement markings in addition to addressing the graffiti issues as recommended (short-term, $5,100).
- Encourage members of the staff to serve as crossing guards along 32nd Ave S and S 10th St (short-term and long-term).

- Encourage members of the staff to educate and to help enforce parking restrictions (short-term).
- Encourage carpooling among parents/guardians as well as by members of the staff (short-term and long-term).
- Encourage Cellphone Lot/Waiting Area type parking among parents/guardians as well as by members of the staff (short-term and long-term).
    - Consider:
        - University Park
        - University Lutheran Church
- Further encourage kids to safely walk or bike to school (short-term and long-term).
- Encourage kids to use all exits of the school in a safe and organized manner.
- Repair/replace the faulted sidewalk around the intersection of N 20th St and 5th Ave N. (long-term, $1,000).
- Improve drainage conditions around the intersection of N 20th St and 5th Ave N .
- Add a parking lot in the southwest corner of the school premises (long-term, $353,000).
- Consider installing Pedestrian Hybrid Beacons if allowed per MUTCD guidelines in the near future (long-term).
- Targeted enforcement is recommended as and when deemed necessary by the concerned law enforcement agencies.

6.3 South Point Elementary School

- Update signs as recommended (short-term, $700).
- Encourage members of the staff and students from nearby schools to serve as crossing guards along 13th St SE (short-term and long-term).
- Encourage members of the staff to educate and to help enforce parking restrictions especially around the traffic circle within the school premises (short-term).
- Encourage carpooling among parents/guardians as well as by members of the staff (short-term and long-term).
- Continue encouraging kids to safely walk or bike to school (short-term and long-term).
- Move the bike racks to the west side of the main entrance of the school. Add more bike racks as recommended.
- Discourage students from using the eastern driveway when on foot or on bike.
- Review the lighting conditions at the intersection of Bygland Rd SE and 13th St SE.
- Remove temporary control devices that are no longer needed along Bygland Rd SE.
- Move the dynamic speed display sign located along Bygland Rd SE to a safer location.
- Add a parking lot on the east end of the school premises (long-term, $398,000).
- Re-design the two narrow driveways as recommended.
- Targeted enforcement is recommended as and when deemed necessary by the concerned law enforcement agencies.

7.0 REFERENCES

1. Ulteig Engineers, Inc., Grand Forks School Traffic Safety Device Strategy Study, April 2008.
2. Federal Highway Administration, Manual on Uniform Traffic Control Devices 2003 Edition, November 2003.
3. Federal Highway Administration, Manual on Uniform Traffic Control Devices 2009 Edition, May 2012.